



***Pine Lake***  
***Aquatic Vegetation Management Plan***  
***2006 Update***

February 14, 2007

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## Executive Summary

Aquatic Control was contracted by the Laporte Area Lake Association to complete aquatic vegetation sampling in order to update their aquatic vegetation management plan. Funding for development of this plan was obtained from the Laporte Area Lake Association and the Indiana Department of Natural Resources-Division of Fish and Wildlife as part of the Lake and River Enhancement fund (LARE). The update serves as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for additional LARE funds. Items covered include the 2006 sampling results, a review of the 2006 vegetation controls, and updates to the budget and action plans.

Aquatic vegetation is an important component of lakes in Indiana; however, as a result of many factors this vegetation can develop to a nuisance level. Nuisance aquatic vegetation, as used in this paper, is described as plant growth that negatively impacts the present uses of the lake including fishing, boating, swimming, aesthetic, and lakefront property values. A wide variety of native species have created nuisance conditions in high use areas. Two contact herbicide applications per season have been used to control the nuisance species in these areas. The exotic species Eurasian watermilfoil is also present at nuisance levels in several areas of Pine Lake and has been controlled for the last two seasons with the systemic herbicide Renovate.

It is recommended that the Laporte Area Lake Association continue with similar plant management controls in 2007 with a few exceptions. The contact herbicide applications should be adjusted in order to provide more lasting and complete control in the near-shore, high-use areas. This includes adding a copper based herbicide to both treatments. The first treatment should be completed in early June and the second treatment in mid to late July. The selective milfoil treatments must be completed prior to the summer plant sampling. Areas should be mapped during the spring sampling and treated in late spring or early summer. Based the 2006 sampling and past treatments, it is recommended that the Association request enough funds to treat up to 20 acres of milfoil with either Renovate or 2,4-D herbicide. The maximum cost of such a treatment would be \$9,000.00.

At least two surveys should be completed in 2007. The first survey should be completed in late May or early June and be focused on mapping out Eurasian watermilfoil treatment areas. The second survey should be completed in late summer and focus on assessing the effects of the treatment on native and targeted exotic vegetation. A Tier II survey, similar to the one completed in 2006, should be sufficient to achieve this goal. In addition, future LARE funded Eurasian watermilfoil treatments and plant sampling should include Stone Lake. This lake is connected to Pine Lake so Eurasian watermilfoil can easily be moved from one lake to the other making it important to control milfoil in both lakes.

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## 1.0 INTRODUCTION

Pine Lake is a 564-acre natural lake located on the northwest side of Laporte, Indiana. This report was created in order to update the Pine Lake Aquatic Vegetation Management Plan. The plan update was funded by the Indiana Department of Natural Resources Lake and River Enhancement Program (LARE) and the Laporte Area Lake Association. The update serves as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for additional LARE funds. Items covered include the 2006 sampling results, a review of the 2006 vegetation controls, and updates to the budget and action plans. Once this plan is reviewed and approved, the update should be included in the original vegetation management plan, following the 2005 update and prior to the appendix.

## 2.0 2006 PLANT SAMPLING RESULTS

Two surveys were completed in 2006 in order to document changes in the plant community and to determine success or failure of control techniques. A Tier I survey was completed in May. This survey was designed to select treatment areas and document changes in the plant community. A second survey was completed in August. This survey included Tier I and II sampling and was designed to monitor the effectiveness of the controls and changes in the plant community. Listed below are the common and scientific names of species sampled in 2006.

**Table 1. Common and Scientific Names of Species Sampled in 2006 From Pine Lake.**

<b>Scientific Name</b>	<b>Common Name</b>
<i>Bidens beckii</i>	bur marigold
<i>Ceratophyllum demersum</i>	Coontail
<i>Chara spp.</i>	Chara
<i>Elodea canadensis</i>	American elodea
<i>Hibiscus palustris</i>	swamp rose mallow
<i>Lemna trisulca</i>	star duckweed
<i>Lythrum salicaria</i>	purple loosesrtife
<i>Myriophyllum heterophyllum</i>	variable watermilfoil
<i>Myriophyllum sibiricum</i>	northern watermilfoil
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil
<i>Najas flexilis</i>	slender naiad
<i>Najas guadalupensis</i>	southern naiad
<i>Nuphar variegatum</i>	spatterdock
<i>Nymphaea tuberosa</i>	white water lily
<i>Potamogeton amplifolius</i>	largeleaf pondweed
<i>Potamogeton crispus</i>	curlyleaf pondweed
<i>Potamogeton gramineus</i>	variable pondweed
<i>Potamogeton pectinatus</i>	sago pondweed
<i>Potamogeton praelongus</i>	whitestem pondweed
<i>Potamogeton pusillus</i>	small pondweed
<i>Potamogeton richardsonii</i>	Richardson's pondweed
<i>Potamogeton robbins</i>	Robbin's pondweed
<i>Potamogeton zosteriformis</i>	flatstem pondweed
<i>Ranunculus flabellaris</i>	yellow water-cup
<i>Typha latifolia</i>	common cattail
<i>Vallisneria americana</i>	eel grass
<i>Zosterella dubia</i>	Water stargrass

## 2.1 Spring Survey (Tier I)

On May 22, 2006 a Tier I survey was completed on Pine Lake. Secchi depth was 16.0 feet and the survey revealed 26 distinct plant beds within Pine Lake totaling 372.1 acres. (Table 2 & Figure 1). A total of 15 species were observed.

**Table 2. Pine Lake, Tier I Survey Results, May 22, 2006**

Lake: Pine		Number of plant beds: 26																									
Date: 5/22/06		Number of species: 15																									
Secchi: 16.0		Littoral zone size: 372.1																									
Plant Bed I.D.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Plant Bed Size (acres)		13.6	38.3	3.3	0.3	4.9	3.0	8.5	1.2	17.7	48.6	1.9	1.6	6.4	5.0	4.2	1.1	19.1	12.3	29.5	11.1	37.6	0.5	20.7	26.2	0.5	1.0
bur marigold		4	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-
curtyleaf pondweed		2	2	2	-	3	2	3	-	1	2	2	2	-	-	-	1	-	2	-	2	-	4	-	2	-	-
flatstem pondweed		2	-	-	-	-	3	-	-	3	-	-	-	-	-	-	-	3	-	3	-	3	-	-	2	-	-
Richardson's pondweed		-	4	2	2	3	2	-	2	3	2	2	2	3	1	3	3	-	3	3	-	-	-	-	4	-	-
spatterdock		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	2	-	-
Eurasian watermilfoil		-	-	3	4	-	-	1	4	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
American elodea		-	-	-	-	1	1	2	-	2	2	2	-	2	2	-	-	3	-	3	-	-	-	2	-	-	-
eel grass		-	-	-	-	-	-	-	-	2	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-
largeleaf pondweed		-	-	-	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-	-	-	3	-	2	1	-	-
northern watermilfoil		-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	3	-	-	-	-	-	-	-	-	-	-
water stargrass		-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2	2	-	-	-	-
white water buttercup		-	-	-	-	-	-	-	-	-	-	-	-	2	3	-	-	2	-	-	-	-	-	-	-	-	-
white water lily		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	4	-
sago pondweed		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
Robbin's pondweed		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	-	-

\*Rating based on score of 1-4 with 1 being least dense to 4 being most dense

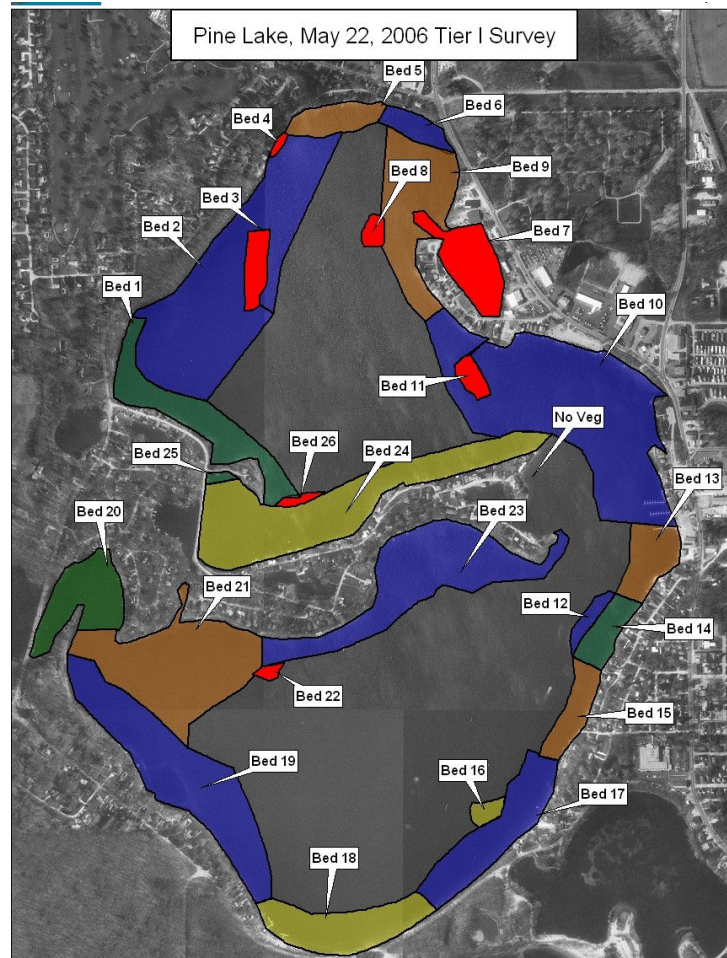


Figure 1. Tier I plant beds, Pine Lake, May 22, 2006.

Plant bed 1 was located on the southwestern side of the north basin (Figure 1). The total area was determined to be 13.6 acres and the substrate was primarily sand with silt. A total of 3 species were observed within the plant bed. Plant bed 1 was dominated by bur-marigold (*Bidens beckii*) which received an abundance rating of 4. Curlyleaf pondweed (*Potamogeton crispus*) and flatstem pondweed (*Potamogeton zosteriformes*) both received a rating of 2.

Plant bed 2 was located along the western side of the north basin. This bed measured 38.3 acres and the substrate was made up of silt with sand. Richardson's pondweed (*Potamogeton richardsonii*) was the dominant plant species and received a score of 4. Curlyleaf pondweed scored a 2 and spatterdock (*Nuphar variegatum*) scored a 1.

Plant bed 3 was located within plant bed 2 and measured 3.3 acres. This plant bed was comprised primarily of Eurasian watermilfoil (*Myriophyllum spicatum*) which scored an abundance rating of 3. Richardson's pondweed and curlyleaf pondweed both received an abundance rating of 2. This plant bed was of concern due to a relatively high abundance of Eurasian watermilfoil.

Plant bed 4 was located just north of plant bed 2 and was 0.3 acres in size. This bed was dominated by Eurasian watermilfoil which received a score of 4. Richardson's pondweed was also present and received a score of 2.

Plant bed 5 was also located along the shore of the north basin. This bed was determined to be 4.9 acres. Richardson's and curlyleaf pondweed were the dominant species and both received a score of 3. American elodea (*Elodea canadensis*) was the only other species observed and received a score of 1.

Plant bed 6 was located just east of bed 5 and was 3.0 acres in size. This bed contained flatstem pondweed which received a score of 3. Curlyleaf and Richardson's pondweed each received a score of 2. American elodea was present at the lowest abundance rating.

Plant bed 7 encompassed the large bay along the eastern side of the north basin and totaled 8.5 acres. This bed was dominated by curlyleaf pondweed which received a rating of 3. American elodea was present at a rating of 2. Eurasian watermilfoil was also observed at a low abundance.

Plant bed 8 was located west of bed 7. This bed was measured and found to be 1.2 acres. Eurasian watermilfoil was the most abundant species and received a rating of 4. The only other species observed was Richardson's pondweed and it received a score of 2.

Plant bed 9 was a large bed along the eastern side of the north basin. This bed measured 17.7 acres. Richardson's pondweed and flatstem pondweed were the two most abundant species and received abundance ratings of 3. Eel grass and elodea were also present and received a rating of 2. Curlyleaf pondweed was observed at the lowest abundance rating.

Plant bed 10 was another large bed located just south of bed 9. This bed was found to be 48.6 acres. Elodea, curlyleaf pondweed, largeleaf pondweed, Richardson's pondweed, and Eurasian watermilfoil all received ratings of 2. Bur marigold was also observed and received the lowest abundance rating.

Plant bed 11 was located inside of plant bed 10 and measured at 1.9 acres. Eurasian watermilfoil was the most abundant species and received a rating of 3. Elodea, Richardson's pondweed, and curlyleaf pondweed were observed at a rating of 2.

Plant bed 12 was located south of bed 10 and measured 1.6 acres. Largeleaf pondweed was the most abundant species and received a rating of 3. Water stargrass (*Zosterella dubia*), curlyleaf pondweed, and Richardson's pondweed were observed at a score of 2.

Plant bed 13 was located south of bed 10 along the eastern shore of the south basin and measured 6.4 acres. Richardson's pondweed was the most abundant species and received a rating of 3. Elodea, eel grass (*Valisneria americana*), and white water buttercup (*Ranunculus longirostris*) were also observed and received a rating of 2.

Plant bed 14 was located south of bed 13 and was determined to be 5.0 acres. White water buttercup was the most abundant species and received a rating of 3. Eel grass and

elodea were also observed and received a rating of 2. Richardson's pondweed was observed at the lowest abundance.

Plant bed 15 was located just south of bed 14 along the eastern shore of the south basin. This bed was found to be 4.2 acres. Richardson's pondweed and northern watermilfoil (*Myriophyllum sibiricum*) were the only species observed and both received a score of 3.

Plant bed 16 was located near the southeast corner of the south basin. This bed was found to be 1.1 acres. Richardson's pondweed and northern watermilfoil were the dominant species and received a rating of 3. Curlyleaf pondweed was also observed and received a rating of 1.

Plant bed 17 was located along the southeast shore of the south basin. The bed was 19.1 acres and comprised mainly of flatstem pondweed. White water buttercup and bur-marigold were present at a rating of 2.

Plant bed 18 was located along the south shore of the south basin. This bed was found to be 12.3 acres. Elodea and Richardson's pondweed were the most abundant species and received a rating of 3. Curlyleaf pondweed was also present and received a rating of 2.

Plant bed 19 was located in the southwest corner of the south basin and measured 29.5 acres. This bed was comprised of flatstem pondweed and Richardson's pondweed which both received a score of 3.

Plant bed 20 was located in the far western corner of the south basin and was found to be 11.1 acres. This is a very shallow area comprised of wetland fauna. Spatterdock and elodea were the most abundant species in this area and received a score of 3. Curlyleaf pondweed received a rating of 2. White water lily (*Nymphaea tuberosa*) was present at the lowest abundance rating.

Plant bed 21 was located just east of bed 20 and was found to be 37.6 acres. Largeleaf pondweed, flatstem pondweed, and sago pondweed (*Potamogeton pectinatus*) were all observed at a rating of 3. Water stargrass was also present and received a rating of 2.

Plant bed 22 was a small bed northeast of bed 21 that measured 0.5 acres. Curlyleaf pondweed was the dominant species and received a rating of 4. Water stargrass was also observed and received a rating of 2.

Plant bed 23 was located along the north shore of the south basin. This bed was found to be 20.7 acres. Robbin's pondweed (*Potamogeton robbinsii*) was the most abundant species and received a rating of 3. Elodea, largeleaf pondweed, and bur-marigold all received a rating of 2.

Plant bed 24 was located along the south shore of the north basin and was found to be 26.2 acres. This bed was dominated by Richardson's pondweed which received a score of 4. Spatterdock, flatstem pondweed, and robbin's pondweed were all present at a rating of 2. White water lily and largeleaf pondweed were present at the lowest rating.

Plant bed 25 was a small bed just north of bed 24 that measured 0.5 acres. White water lily was the only species observed and received a rating of 4.

Plant bed 26 was another small bed just north of bed 24 and south of bed 1. Bed 26 was found to be 1.0 acre in surface area. Eurasian watermilfoil was the only species observed and received a rating of 4.

## 2.2 Summer Survey

Tier I and Tier II surveys were completed on August 14, 2006. This survey was designed to document changes in the plant community and assess the effectiveness of the control techniques. However, the LARE funded milfoil treatment was not completed prior to this survey, so this survey did little to assess the effectiveness of the treatment.

### 2.2.1 Tier I survey

On August 14, 2006 a Tier I survey was completed on Pine Lake. The Secchi depth was measured and found to be 8.0 feet. The Tier I survey revealed 16 distinct plant beds comprised of 19 species and encompassing 356.1 acres (Table 2 & Figure 2).

**Table 3. Pine Lake, Tier I Survey Results, August 14, 2006.**

<b>Lake: Pine</b>		<b>Number of plant beds: 16</b>								<b>Littoral zone max depth: 20</b>							
<b>Date:8/14/06</b>		<b>Number of species: 20</b>															
<b>Secchi: 8.0</b>		<b>Littoral zone size: 356.1</b>															
<b>Plant Bed I.D.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	
<b>Plant Bed Size (acres)</b>	<b>3.1</b>	<b>46.7</b>	<b>11.2</b>	<b>21.1</b>	<b>19.1</b>	<b>20.6</b>	<b>53.3</b>	<b>22.8</b>	<b>13.4</b>	<b>47.1</b>	<b>18.6</b>	<b>8.1</b>	<b>16.4</b>	<b>33.5</b>	<b>9.6</b>	<b>11.5</b>	
white water lily	2	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	
spatterdock	2	-	2	-	-	-	-	2	3	-	-	-	-	-	-	-	
common coontail	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	
bur marigold	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
American elodea	3	-	4	-	-	-	-	4	4	-	-	-	-	-	4	-	
Richardson's pondweed	3	3	-	1	3	3	2	-	-	2	-	1	2	3	-	1	
eel grass	4	4	1	4	3	2	2	-	3	3	2	-	3	2	2	2	
southern naiad	3	3	-	2	-	1	2	-	-	2	-	3	-	3	-	-	
water stargrass	3	2	1	1	-	-	4	3	-	-	-	-	4	-	-	-	
Eurasian watermilfoil	1	1	3	2	1	1	2	2	-	1	-	-	-	1	2	4	
variable milfoil	1	1	-	-	-	-	-	-	-	1	1	-	-	1	-	-	
grassy arrowhead	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
common cattail	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
purple loosestrife	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
variable pondweed	-	-	1	-	2	-	1	-	-	-	2	4	-	-	-	-	
slender naiad	-	-	-	-	2	-	2	-	-	4	-	1	-	-	3	-	
sago pondweed	-	-	-	-	-	-	1	-	-	2	2	-	-	-	-	-	
flatstemed pondweed	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	
small pondweed	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	

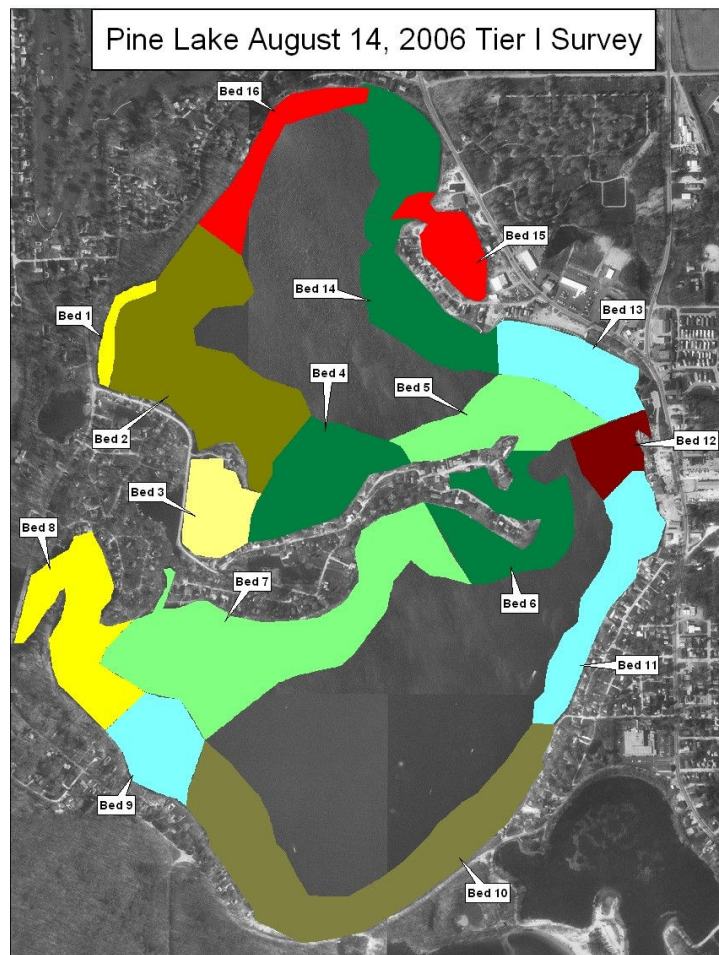


Figure 2. Tier I plant beds, Pine Lake, August 14, 2006.

Plant bed 1 was located on the eastern side of the north basin and measured 3.1 acres (Figure 1). This was the most diverse bed, containing 14 different species. Eel grass was the most abundant species and received a score of 4. Southern naiad (*Najas guadalupensis*), water stargrass, Richardson's pondweed, and elodea all received a rating of 3. Bur marigold, common coontail (*Ceratophyllum demersum*), spatterdock, and white water lily all received a score of 2. Eurasian watermilfoil, variable watermilfoil (*Myriophyllum heterophyllum*), grassy arrowhead (*Sagittaria graminea*), common cattail (*Typha latifolia*), and purple loosestrife (*Lythrum salicaria*) all received a rating of 1.

Plant bed 2 was east of bed 1 and measured 46.7 acres. Eel grass was the most abundant species and received a score of 4. Richardson's pondweed and southern naiad received a score of 3. Water stargrass was the only species observed that scored a 2. Eurasian watermilfoil and variable watermilfoil each received a score of 1.

Plant bed 3 was located in the southeast corner of the north basin and was found to be 11.2 acres. This bed was dominated by elodea, which received a score of 4. Eurasian watermilfoil was present at a rating of 3. Spatterdock received a score of 2. Water

stargrass, white water lily, eel grass, and variable pondweed (*Potamogeton gramineus*) were all assigned a rating of 1.

Plant bed 4 was located east of bed 3 and found to be 21.1 acres. Eel grass was the most abundant species and received a score of 4. Southern naiad and Eurasian watermilfoil received a score of 2. Water stargrass and Richardson's pondweed were present at the lowest abundance rating.

Plant bed 5 was also located east of bed 4 and encompassed an area of 19.1 acres. Richardson's pondweed and eel grass were the most abundant species and both received a score of 3. Variable pondweed and common naiad (*Najas flexilis*) both received a score of 2. Eurasian watermilfoil was the least abundant species and received a score of 1.

Plant bed 6 was located south of bed 5 and was measured at 20.6 acres. Richardson's pondweed was the most abundant species and received a score of 3. Eel grass was the second most abundant species with a score of 2. Eurasian watermilfoil and southern naiad were present at the lowest abundance rating.

Plant bed 7 was a large bed just west of bed 6 along the northern shore of the south basin. This bed was measured and found to be 53.3 acres. Water stargrass was the most abundant species and received a score of 4. Richardson's pondweed, Eurasian watermilfoil, eel grass, flatstem pondweed, common naiad, and southern naiad all received scores of 2. Variable and sago pondweed received scores of 1.

Plant bed 8 was located in the western corner of the south basin just west of bed 7. This bed was found to be 22.8 acres. Elodea was the most abundant species observed and received a score of 4. Water stargrass ranked second in abundance and received a score of 3. Flatstem pondweed and spatterdock each received a score of 2. White water lily and grassy arrowhead were also observed and received a score of 1.

Plant bed 9 was located east of bed 8 and south of bed 7. This bed encompassed an area of 13.4 acres. Elodea was the most abundant species and received a score of 4. Eel grass and spatterdock received a score of 3. White water lily was also observed and received a score of 1.

Plant bed 10 was a large bed along the entire south shore of the south basin. This bed measured 47.1 acres and contained 7 species. Common naiad was the most abundant species and received a score of 4. Eel grass was the only species present that received a score of 3. Southern naiad, sago pondweed, and Richardson's pondweed all received a score of 2. Eurasian and variable pondweed were both present at the lowest rating.

Plant bed 11 was located just north of bed 10 and measured 18.6 acres. This bed was comprised of eel grass, variable pondweed, and sago pondweed which each received a rating of 2. Variable milfoil and common coontail were also present and received a score of 1.

Plant bed 12 was located north of bed 11 and measured 8.1 acres. Variable pondweed dominated this bed and received a score of 4. Southern naiad was present and received a score of 3. Common naiad, small pondweed, and Richardson's pondweed each received a score of 1.

Plant bed 13 was located north of bed 12 and was found to be 16.4 acres. Water stargrass was the most abundant species and received a score of 4. Eel grass was the second most abundant species and received a score of 3. Richardson's pondweed was also observed and received a score of 2.

Plant bed 14 was located west of bed 13 along the eastern shore of the north basin. This bed encompassed 33.5 acres and contained 5 species. Richardson's pondweed and southern naiad were the most abundant species and received a score of 3. Eel grass was found in this bed and received a score of 2. Eurasian and variable watermilfoil were present at the lowest rating.

Plant bed 15 was located in the large bay along the eastern shoreline of the north basin. This bed was found to be 9.6 acres. Elodea was the most abundant species and received a score of 4. Common naiad received a score of 3. Eurasian watermilfoil and eel grass were also present and received a score of 2.

Plant bed 16 started along the north shore of the north basin and measured 11.5 acres. This bed contained the largest concentration of Eurasian watermilfoil which received a score of 4. Eel grass and common coontail were also present and received a rating of 2. Richardson's pondweed was present at the lowest level and received a score of 1.

### *2.2.2 Tier II survey*

Tier II sampling took place following the Tier I sampling on August 14, 2006. A Secchi disk reading was taken prior to sampling and was found to be 8.0 feet. Plants were present to a maximum of 20.0 feet. Ninety sample sites were selected based upon IDNR sampling protocol which calls for a pre-set number of sites to be sampled within each 5 foot depth contour. For Pine Lake, 22 sites were sampled between 0-5 feet, 21 sites from 5-10 feet, 19 sites from 10-15 feet, 18 sites from 15-20 feet and 10 sites from 20-25 feet. As directed by IDNR protocol, ten sites were sampled that were deeper than 20.0 feet even though plants were not present in the deeper water. In 2007, all sample sites should be 20-feet or less. Results of the sampling are listed in Table 3. Overall aquatic vegetation distribution and density is illustrated in Figure 3.

**Table 4. Occurrence and abundance of submersed aquatic plants in Pine Lake  
August 14, 2006.**

Occurrence and abundance of submersed aquatic plants in Pine Lake						
County: La Porte		Sites with plants: 67		Mean species/site: 2.20		
Date: 8/14/2006		Sites with native plants: 67		Standard error (ms/s): 0.18		
Secchi (ft): 8		Number of species: 18		Mean native species/site: 2.09		
Maximum plant depth (ft): 20		Number of native species: 17		Standard error (mns/s): 0.17		
Trophic status Oligotrophic		Maximum species/site: 6		Species diversity: 0.90		
Total sites: 90				Native species diversity: 0.89		
All depths (0 to 25 ft)	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	43.3	55.7	4.4	5.6	33.3	25.1
eel grass	43.3	56.7	1.1	5.6	36.7	24.7
American elodea	23.3	76.7	0.0	2.2	21.1	13.1
flatstem pondweed	18.9	81.1	0.0	3.3	15.6	5.3
Richardson's pondweed	18.9	81.1	0.0	2.2	16.7	8.2
white-stemmed pondweed	14.4	85.6	0.0	1.1	13.3	4.2
bur marigold	14.4	85.6	1.1	0.0	13.3	3.8
slender naiad	12.2	87.8	2.2	0.0	8.9	3.3
Eurasian watermilfoil	11.1	88.9	0.0	0.0	11.1	2.7
water stargrass	11.1	88.9	1.1	0.0	10.0	4.9
Robbin's pondweed	11.1	88.9	1.1	0.0	10.0	5.3
Potamogeton gramineus	6.7	92.3	0.0	0.0	6.7	4.0
variable watermilfoil	4.4	4.4	0.0	1.1	3.3	1.8
star duckweed	3.3	86.7	0.0	1.1	2.2	0.7
sago pondweed	3.3	86.7	0.0	0.0	3.3	2.9
Chara spp.	2.2	97.8	0.0	1.1	1.1	0.4
southern naiad	2.2	97.8	0.0	0.0	2.2	0.9
large leaf pondweed	1.1	98.9	0.0	1.1	0.0	0.2
Depth: 0 to 5 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
American elodea	54.5	45.5	0.0	9.1	45.5	41.8
eel grass	50.0	50.0	4.5	4.5	40.9	22.7
flatstem pondweed	27.3	72.7	0.0	9.1	18.2	9.1
slender naiad	27.3	80.8	4.5	0.0	13.6	5.5
coontail	22.7	77.3	0.0	0.0	22.7	4.5
Richardson's pondweed	18.2	81.8	0.0	4.5	13.6	7.3
Potamogeton gramineus	18.2	81.8	0.0	0.0	18.2	10.9
white-stemmed pondweed	18.2	80.8	0.0	0.0	18.2	5.5
water stargrass	18.2	72.7	9.1	0.0	18.2	10.9
bur marigold	18.2	80.8	4.5	0.0	13.6	3.6
Robbin's pondweed	18.2	50.0	4.5	4.5	40.9	10.9
sago pondweed	13.6	86.4	0.0	0.0	13.6	11.8
star duckweed	9.1	90.9	0.0	4.5	4.5	1.8
southern naiad	9.1	90.9	0.0	0.0	9.1	3.6
variable watermilfoil	9.1	90.9	0.0	4.5	4.5	3.6
Chara spp.	4.5	95.5	0.0	4.5	0.0	0.9
Eurasian watermilfoil	4.5	95.5	0.0	0.0	4.5	0.9
largeleaf pondweed	4.5	95.5	0.0	4.5	0.0	0.9
Depth: 5 to 10 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
eel grass	76.2	23.8	0.0	4.8	71.4	51.4
common coontail	47.6	52.4	0.0	4.8	42.9	24.8
Richardson's pondweed	47.6	52.4	0.0	0.0	47.6	24.8
bur marigold	42.9	47.1	0.0	0.0	42.9	12.4
Eurasian watermilfoil	38.1	61.9	0.0	0.0	38.1	7.6
American elodea	33.3	86.7	0.0	0.0	33.3	10.5
white-stemmed pondweed	28.6	71.4	0.0	0.0	28.6	5.7
Robbin's pondweed	23.8	76.2	0.0	0.0	23.8	10.5
flatstem pondweed	19.0	81.0	0.0	0.0	19.0	5.7
slender naiad	19.0	81.0	0.0	0.0	19.0	7.6
water stargrass	14.3	85.7	0.0	0.0	14.3	2.9
Potamogeton gramineus	9.5	90.5	0.0	0.0	9.5	5.7
variable watermilfoil	9.5	90.5	0.0	0.0	9.5	3.8
Chara spp.	4.8	95.2	0.0	0.0	4.8	1.0
star duckweed	4.8	85.2	0.0	0.0	4.8	1.0
Depth: 10 to 15 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	88.9	11.1	5.6	11.1	72.2	66.7
eel grass	61.1	38.9	0.0	11.1	50.0	32.2
flatstem pondweed	38.9	61.1	0.0	5.6	33.3	8.9
white-stemmed pondweed	16.7	83.3	0.0	0.0	16.7	7.8
water stargrass	16.7	83.3	5.6	0.0	11.1	7.8
American elodea	11.1	88.9	0.0	0.0	11.1	2.2
Richardson's pondweed	11.1	88.9	0.0	0.0	11.1	2.2
Eurasian watermilfoil	5.6	94.4	0.0	0.0	5.6	3.3
Robbin's pondweed	5.6	94.4	0.0	0.0	5.6	1.1
Depth: 15 to 20 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	42.1	57.9	15.8	10.5	15.8	23.2
Richardson's pondweed	5.3	94.7	0.0	5.3	0.0	1.1
eel grass	5.3	94.7	0.0	5.3	0.0	3.2

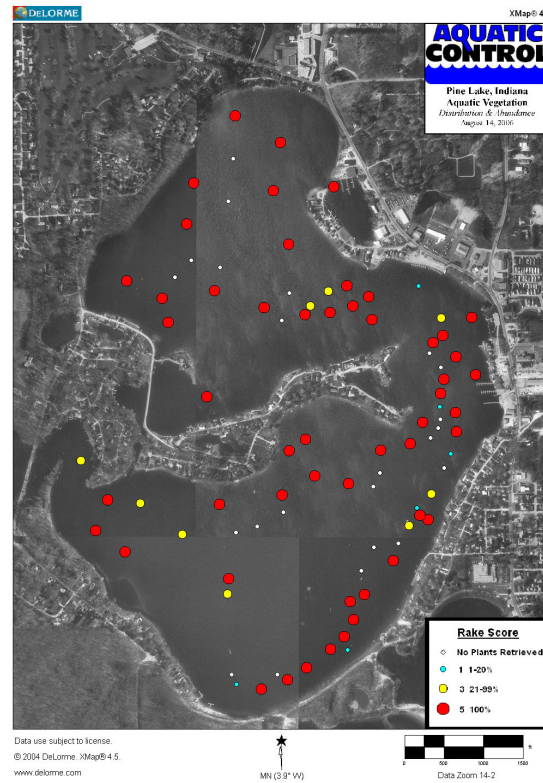


Figure 3. Pine Lake, Overall aquatic vegetation distribution and density, August 14, 2006.

A total of 18 species were collected of which 17 of the species were native (Eurasian watermilfoil was the only exotic species collected). Sixty-seven of the 90 sites contained plants (many of the sites that did not have plants were too deep for vegetation to grow). The maximum number of species collected at a site was 6. The average number of species per site was 2.2. Coontail and eel grass were present at the highest percentage of sample sites (Figure 4 & 5). Elodea was the next most frequently occurring species followed by flatstem pondweed, Richardson's pondweed, bur marigold, whitestem pondweed (*Potamogeton praelongus*), common naiad, robbins pondweed, water stargrass, Eurasian watermilfoil (Figure 6), variable pondweed, variable milfoil, sago pondweed, star duckweed, southern naiad, Chara, and largeleaf pondweed.

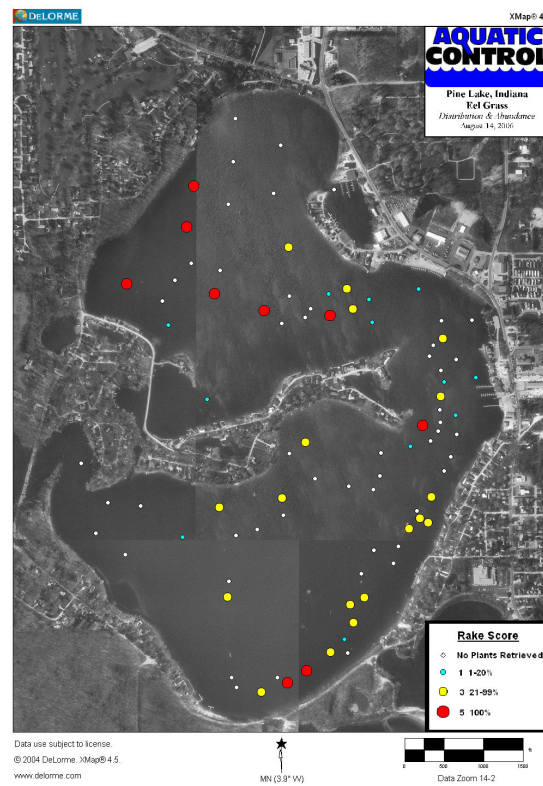


Figure 4. Pine Lake, eel grass distribution and abundance, August 14, 2006.

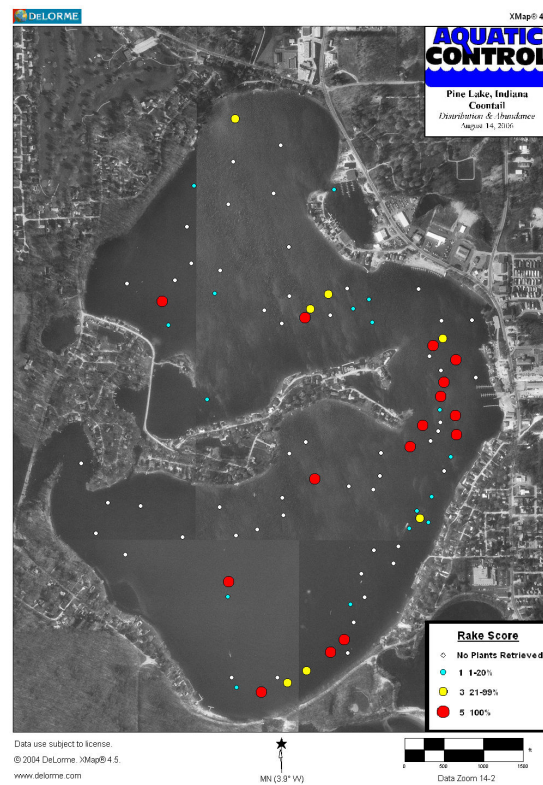


Figure 5. Pine Lake, coontail distribution and abundance, August 14, 2006.

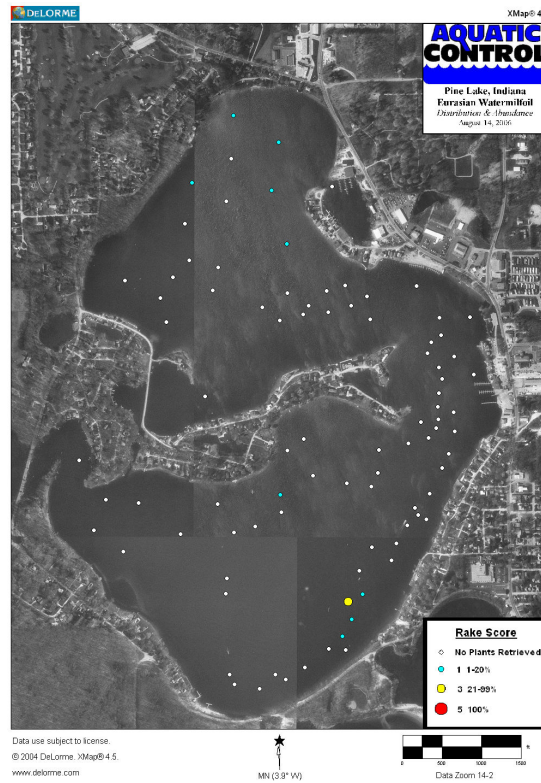


Figure 6. Pine Lake, Eurasian watermilfoil distribution and abundance, August 14, 2006.

### 2.3 Aquatic Vegetation Sampling Discussion

Pine Lake contains what may be one of the most diverse plant communities in the state. In addition, Pine Lake contains thriving populations of white-stem pondweed, Richardson's pondweed, bur-marigold, and robbin's pondweed which are all considered state imperiled species. The plant community has remained relatively stable over the last four sampling events as illustrated in Figures 7 and 8. It is important to preserve this plant community for several reasons. This diverse plant community likely aids in fish production, slows the spread of invasive species, and stabilizes and improves the overall water quality of the lake.

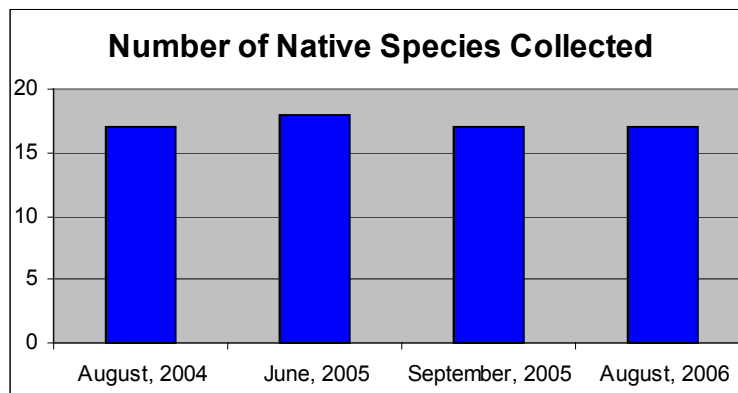


Figure 7. Pine Lake, comparison of number of native species collected in the last four surveys.

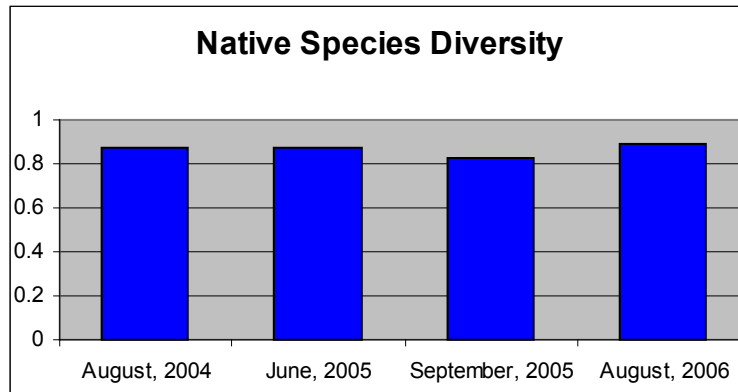


Figure 8. Pine Lake, comparison of native diversity in the last four surveys.

Exotic submersed plant species have gained a foothold in Pine Lake despite the presence of a dense and diverse native community. The presence of such a diverse community has likely limited the expansion of exotic vegetation. Selective controls with Renovate herbicide appeared to have decreased the abundance of milfoil last season. This season the control was not initiated until after the August sampling, so the results of that treatment are not illustrated. The lack of treatment is apparent in Figure 9.

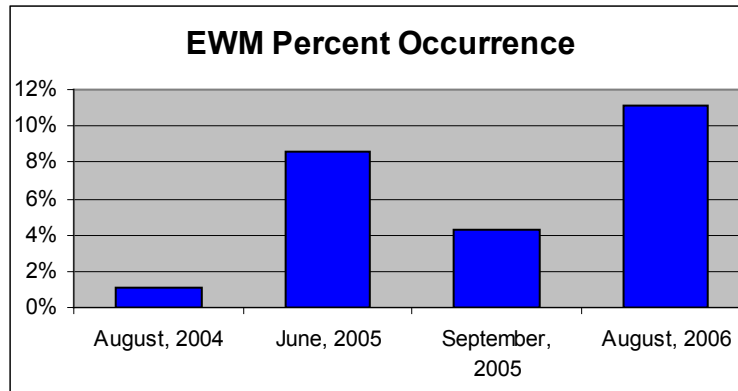


Figure 9. Pine Lake, comparison of Eurasian watermilfoil percent occurrence in the last four surveys.

Future sampling should be completed in a similar manner for the next two seasons (as long as the treatments are completed in late spring). This sampling will provide valuable information that can be used to effectively control nuisance species and preserve beneficial natives.

### 3.0 2006 VEGETATION CONTROL

Aquatic Control completed two different types of herbicide treatments on Pine Lake during the 2006 season, non-selective contact treatments and selective systemic

treatments. The contact treatments consisted of applying Aquathol herbicide to near-shore nuisance areas in the spring and Reward herbicide to the same areas in late summer (two treatments are needed due to regrowth). Contact herbicide treatments were completed on May 22 and July 21. A total of 16 acres of nuisance vegetation was treated (Figure 10). One return trip was made to touch up areas of poor control.



Figure 10. Pine Lake, 2006 contact herbicide treatment areas.

On August 31, 2006 a LARE funded selective treatment was completed using Renovate herbicide to control Eurasian watermilfoil. Treatment areas were selected after the August sampling. A total of 15.0 acres of milfoil was treated (Figure 11). A small section of the August selective milfoil treatment included part of the contact treatment area due to some milfoil regrowth near shore. On September 21, the milfoil treatment area was inspected and very little milfoil remained. This treatment should have been completed in late May or early June. Due to miscommunication between offices the treatment did not get completed in a timely fashion. This cannot, and will not, happen next season.



Figure 11. Pine Lake, Eurasian watermilfoil treatment areas.

#### 4.0 PUBLIC PARTICIPATION

A public meeting was held on September 21, 2006 in order to gain input concerning the plan from lake users, educate lake users on the benefits of native vegetation, inform lake users about the 2006 vegetation controls, and to update lake users on 2006 plans. Twelve of those in attendance took the time to fill out a survey form. The survey respondents indicated that 100% of them used the lake for boating, 67% used the lake for fishing, 83% for swimming, and 25% for irrigation.

Concerning problems with the lake, 83% indicated dredging was needed, 8% said there was a fish population problem, 16% said there was overuse by non-residents, 25% said there was poor water quality, 92% said there were too many aquatic plants.

All of the individuals indicated that they were in favor of continuing with the aquatic plant treatments. There was also worry over the low lake level. This level has fluctuated widely over the last century. This season the lake was at its lowest level in several decades. This has created many problems for individuals living on the lake and for individuals trying to access the lake. Pine Lake fluctuates according to the water table making this a very difficult problem. There is currently a group looking into possible solutions.

Another topic discussed at the public meeting was the recent discovery of hydrilla (*Hydrilla verticillata*) in Lake Manitou. Hydrilla is an invasive aquatic species that was originally discovered in Florida in the 1960's. There are many characteristics of hydrilla that make it a threat to Indiana waterways. This species can grow in lower light conditions than most native species, grows faster than most native species, and can shade out other species by forming a surface canopy. Hydrilla can be easily confused with

native elodea. The best way to distinguish hydrilla from native elodea is that hydrilla typically has five leaves along each whorl along with visible serrated edges along the leaf margin (Figure 12). What makes controlling the spread of hydrilla difficult is the fact that it can be spread by fragments. **That is why it is vitally important that lake users remove all plants and sediment from their boats when entering and leaving Pine Lake.** More information about controlling the spread of hydrilla can be found at [www.protectyourwaters.net](http://www.protectyourwaters.net).



Figure 12. Illustration of hydrilla on the left compared to native elodea on the right. Hydrilla typically contains five toothed leaves per whorl while native elodea typically has three leaves per whorl and the teeth are not visible on the leaves (Illustrations provided by Applied Biochemist).

The Association has also created a website located at [www.laportelakes.com](http://www.laportelakes.com). This site will help inform individuals of best management practices, lake history, and should be a good tool to keep lake users informed of plant management activities. It is recommended that the original plan, along with all of the updates, be placed on the website. A link to [www.protectyourwaters.net](http://www.protectyourwaters.net) would also be beneficial in the fight against the spread of hydrilla.

## 5.0 ACTION PLAN AND BUDGET UPDATE

It is recommended that the Laporte Area Lake Association continue with similar plant management controls next season with a few exceptions. The contact herbicide applications should be adjusted in order to provide more lasting and complete control in the near-shore, high-use areas. This includes adding a copper based herbicide to both treatments. Experience has shown that adding this type of herbicide increases the efficacy of Aquathol and Reward. The first treatment should be completed in early June and the second treatment in mid to late July. The early June treatment is designed to control common spring species like curlyleaf and flatstem pondweed. The late summer treatment will be designed to control later growing species like American elodea and common naiad. Pine Lake contains large populations of four state imperiled species,

Robbin's pondweed, bur-marigold, white-stem pondweed, and Richardson's pondweed, so it is important that treatments designed to relieve nuisance conditions do not severely impact these species. Due to the presence of this wide array of rare plant species, no more than 25 acres of shoreline vegetation should be treated with contact herbicides. It is possible that some of the imperiled species will be damaged in the treated areas, but 25 acres is a relatively small area when compared to a littoral zone that exceeds 350 acres. The permit may call for treatment of more than 25 acres, but this has never been exceeded. The Association collects funds from shoreline property owners prior to treatment, so it is not clear where treatment will take place until the day of treatment (Aquatic Control personnel meet with the lake representative just prior to application and they point out the exact location of property owners that wish to take part in the treatment). With this in mind, the permit application includes more area than is actually treated in order to make up for the lack of knowing exactly where treatments will take place.

The selective milfoil treatments must be completed prior to the summer plant sampling. Areas should be mapped during the spring sampling and treated in late spring or early summer. Estimating the amount of Eurasian watermilfoil that will require treatment is a difficult and somewhat inaccurate endeavor, so the spring sampling will be very important (the reason for the annual variation in milfoil abundance is not clear and should be studied further, but that type of study goes beyond the scope of the plan). The best estimate that can be made is based on this year's sampling and past treatments. After reviewing the data it is recommended that the Association request enough funds to treat up to 20 acres of Eurasian watermilfoil with either Renovate or 2,4-D herbicide. The maximum cost of such a treatment would be \$9,000.00. Renovate should be used in areas bigger than 5 acres with an average depth less than 6.0 feet. Granular 2,4-D should be used in areas that are either less than 5.0 acres or that have an average depth greater than 6.0 feet.

At least two surveys should be completed in 2007. The first survey should be completed in late May or early June and be focused on mapping out treatment areas. The second survey should be completed in late summer and focus on assessing the effects of the treatment on native and targeted exotic vegetation. A Tier II survey, similar to the one completed in 2006, should be sufficient to achieve this goal. Stone Lake, which is connected to Pine Lake, should be included in the 2007 plant sampling.

**It is recommended that the Association request \$9,000 for treating Eurasian watermilfoil and \$3,400 for plant sampling and updating the 2007 plan.**

**Table 5. Budget estimates for management options**

	2007	2008	2009
Eurasian watermilfoil or curlyleaf pondweed application*	\$9,000*	\$8,000*	\$6,000*
High-Use Area Herbicide & Application Cost	\$12,000	\$12,000	\$13,000
Vegetation Sampling & Plan Update*	\$3,400*	\$3,400*	\$3,400*
<b>Total:</b>	<b>\$24,400*</b>	<b>\$23,400*</b>	<b>\$22,400*</b>

\*Eligible for Lare Funding, Eurasian watermilfoil estimate based on treating 20 acres with triclopyr the first season (based on spring visual survey), with 15 acres in 2006 and 10 acres in 2007.

## 6.0 APPENDIX UPDATE

### 6.1 2006 August Sampling Data

Lat	Date	Latitude	Longitude	Design	Site	Depth	RAKE	MYS2	CEDE4	CH7AR	LETR	NAFL	POPE6	VAAMS	ELCA7	NAGU	POZO	POR12	POAM	POGR8	MYHE	POPR5	ZODU	BIBE	P
41.62903	8/14/06	-86.739761	1	5.0	5								1								3				1
41.62966	8/14/06	-86.740657	2	17.0	5																				
41.63038	8/14/06	-86.741274	3	13.0	5																				
41.63101	8/14/06	-86.739945	4	3.0	5																				
41.63099	8/14/06	-86.741339	5	4.0	3																				
41.63206	8/14/06	-86.742411	6	2.0	1																				
41.63094	8/14/06	-86.744553	7	5.0	5																				
41.63172	8/14/06	-86.744689	8	6.0	5																				
41.6321	8/14/06	-86.745696	9	6.0	5																				
41.63139	8/14/06	-86.747388	10	16.0	3																				
41.63182	8/14/06	-86.748357	11	23.0	0																				
41.63353	8/14/06	-86.748384	12	6.0	5																				
41.63536	8/14/06	-86.749105	13	6.0	5																				
41.6355	8/14/06	-86.746311	14	2.0	5																				
41.63703	8/14/06	-86.748758	15	5.0	5																				
41.63794	8/14/06	-86.750669	16	8.0	5																				
41.63646	8/14/06	-86.750947	17	20.0	0																				
41.63499	8/14/06	-86.751187	18	19.0	0																				
41.63582	8/14/06	-86.752773	19	7.0	5																				
41.63422	8/14/06	-86.7531	20	5.0	5																				
41.63296	8/14/06	-86.752896	21	17.0	0																				
41.63271	8/14/06	-86.751571	22	21.0	0																				
41.63238	8/14/06	-86.753658	23	21.0	0																				
41.63226	8/14/06	-86.755868	24	3.0	5																				
41.63167	8/14/06	-86.754233	25	15.0	5																				
41.63094	8/14/06	-86.753967	26	3.0	5																				
41.63193	8/14/06	-86.751816	27	6.0	5																				
41.63134	8/14/06	-86.74952	28	7.0	5																				
41.62828	8/14/06	-86.752158	29	3.0	5																				
41.6309	8/14/06	-86.748707	30	12.0	0																				
41.63109	8/14/06	-86.747629	31	14.0	5																				
41.63118	8/14/06	-86.748476	32	6.0	5																				
41.63191	8/14/06	-86.746544	33	8.0	3																				
41.63139	8/14/06	-86.74543	34	6.0	5																				
41.63014	8/14/06	-86.741713	35	16.0	5																				
41.62975	8/14/06	-86.741896	36	21.0	0																				
41.62927	8/14/06	-86.741363	37	23.0	0																				
41.62838	8/14/06	-86.742373	38	12.0	5																				
41.62792	8/14/06	-86.741433	39	16.0	1																				
41.62739	8/14/06	-86.7422	40	8.0	5																				
41.62684	8/14/06	-86.741852	41	23.0	0																				
41.62665	8/14/06	-86.742774	42	12.0	5																				
41.62644	8/14/06	-86.744148	43	6.0	5																				
41.62564	8/14/06	-86.744192	44	17.0	0																				
41.62517	8/14/06	-86.744501	45	21.0	0																				
41.62529	8/14/06	-86.745619	46	8.0	5																				
41.62556	8/14/06	-86.747172	47	12.0	5																				
41.6268	8/14/06	-86.747617	48	5.0	5																				
41.62642	8/14/06	-86.748354	49	4.0	5																				
41.6249	8/14/06	-86.748696	50	9.0	5																				
41.62428	8/14/06	-86.748535	51	21.0	0																				
41.62381	8/14/06	-86.749049	52	18.0	0																				
41.62359	8/14/06	-86.750821	53	14.0	0																				
41.62457	8/14/06	-86.751595	54	4.0	5																				
41.62354	8/14/06	-86.753307	55	4.0	3																				
41.6246	8/14/06	-86.755242	56	3.0	3																				
41.62472	8/14/06	-86.756743	57	2.0	5																				
41.62607	8/14/06	-86.757571	58	2.0	3																				
41.62368	8/14/06	-86.757291	59	2.0	5																				
41.62294	8/14/06	-86.755943	60	3.0	5																				
41.62201	8/14/06	-86.751159	61	16.0	5																				
41.6215	8/14/06	-86.751209	62	12.0	3																				
41.6187	8/14/06	-86.751041	63	23.0	0																				
41.61837	8/14/06	-86.750796	64	18.0	1																				
41.61822	8/14/06	-86.749656	65	13.0	5																				
41.6187	8/14/06	-86.748917	66	23.0	0																				
41.61854	8/14/06	-86.748452	67	11.0	5																				
41.61895	8/14/06	-86.747553	68	7.0	5																				
41.61959	8/14/06	-86.746452	69	14.0	5																				
41.61955	8/14/06	-86.745686	70	3.0	1																				
41.62005	8/14/06	-86.745824	71	10.0	5																				
41.62061	8/14/06	-86.745397	72	9.0	5																				
41.62123	8/14/06	-86.745541	73	12.0	5																				
41.62147	8/14/06	-86.744888	74	8.0	5																				
41.62229	8/14/06	-86.745035	75	16.0	0																				
41.62308	8/14/06	-86.744456	76	16.0	0																				
41.62263	8/14/06	-86.743571	77	9.0	5																				
41.62322	8/14/06	-86.743335	78	16.0	0																				
41.62384	8/14/06	-86.742831	79	16.0	3																				
41.62404	8/14/06	-86.741958	80	5.0	5																				
41.62419	8/14/06	-86.742322	81	9.0	5																				
41.62444	8/14/06	-86.742468	82	20.0	1																				
41.62493	8/14/06	-86.74181	83	14.0	3																				

## 6.2 2007 Pine Lake Vegetation Control Permit



### APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)

Approved State Board of Accounts 1987

☐ Whole Lake ☒ Multiple Treatment Areas

Check type of permit

INSTRUCTIONS: Please print or type information

#### FOR OFFICE USE ONLY

License No.

Date Issued

Lake County

Return to: Page 1 of 6

DEPARTMENT OF NATURAL RESOURCES

Division of Fish and Wildlife

Commercial License Clerk

402 West Washington Street, Room W273

Indianapolis, IN 46204

FEE: \$5.00

Applicant's Name <b>Laporte Area Lake Association</b>		Lake Assoc. Name <b>Laporte Area Lake Association</b>
Rural Route or Street <b>328 Oak Drive</b>		Phone Number <b>219-324-2058</b>
City and State <b>Laporte, IN</b>		ZIP Code <b>46350</b>
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake) <b>Pine Lake</b>	Nearest Town <b>Laporte</b>	County <b>Laporte</b>
Does water flow into a water supply		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Please complete one section for EACH treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # <b>1</b>	LAT/LONG or UTM's <b>Center of Bed at N41.62540 W86.75016</b>	
Total acres to be controlled <b>8</b>	Proposed shoreline treatment length (ft) <b>5700</b>	Perpendicular distance from shoreline (ft) <b>50</b>
Maximum Depth of Treatment (ft) <b>6</b>	Expected date(s) of treatment(s) <b>early June and late July</b>	
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical		
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. <b>Reward, A-thol, Nautique, or Komeen for shoreline treatment., renovate or 2,4-D for selective EWM control</b>		
Plant survey method: <input checked="" type="checkbox"/> Rake <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Other (specify) <b>Data collected from August 2006 T1 survey</b>		
Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Water Stargrass	x	25
Richardson's Pondweed		10
Eel Grass		10
Southern naiad	x	10
Eurasian watermilfoil	x	10
Variable pondweed		10
Slender naiad	x	5
Sago pondweed	x	5
Flatstem pondweed	x	5
Common coontail	x	5
American elodea	x	5

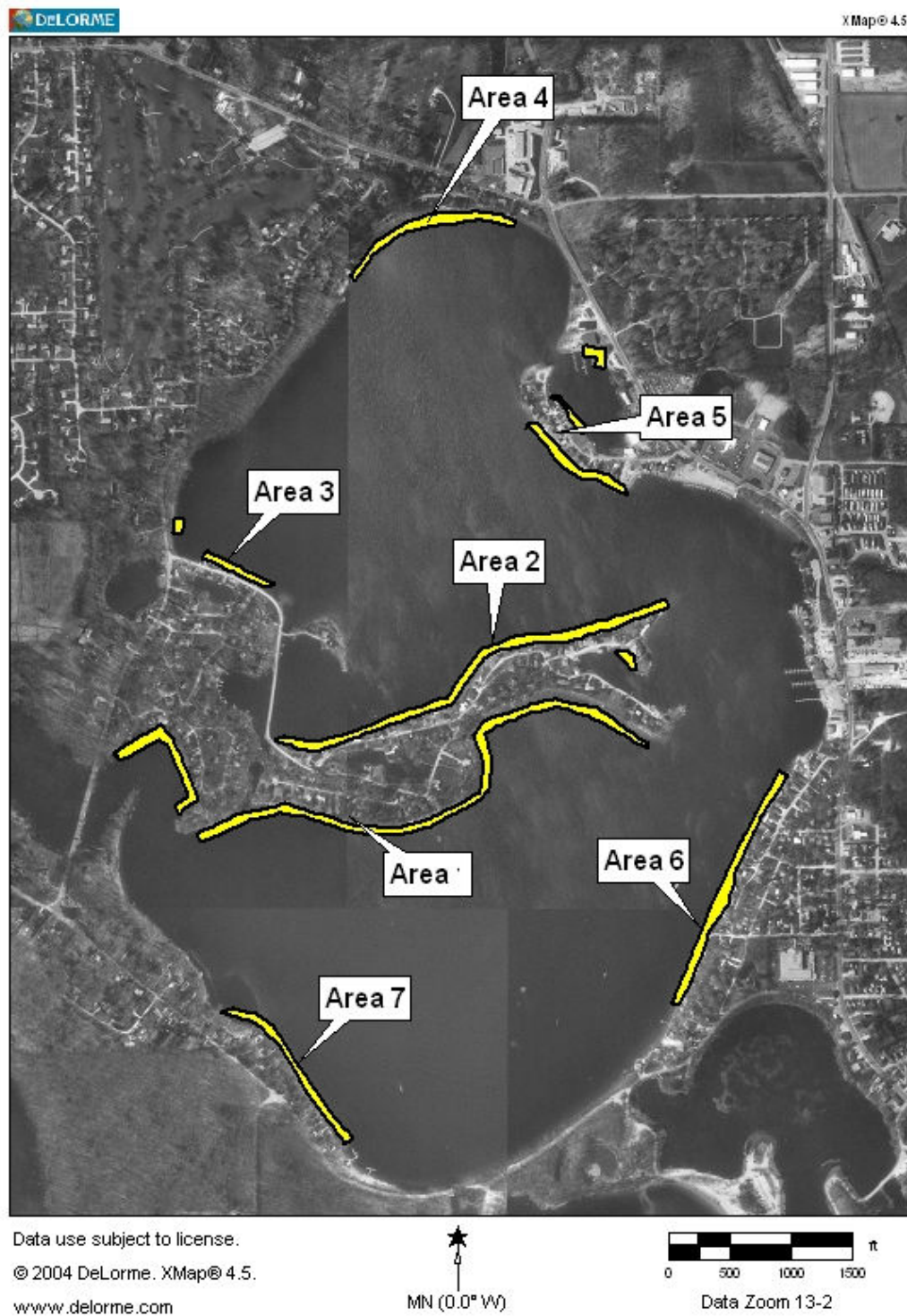


[illegible]



Treatment Area # <u>8</u>		LAT/LONG or UTM's _____ Maximum of 20 acres of EWM where it occurs (see avmp, area determined following spring survey)	
Total acres to be controlled _____		Proposed shoreline treatment length (ft) _____	Perpendicular distance from shoreline (ft) _____
Maximum Depth of Treatment (ft) _____		Expected date(s) of treatment(s) <u>early June</u>	
Treatment method: <input type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. <u>Renovate or 2,4-D herbicide for selective control of EWM</u>			
Plant survey method: <input checked="" type="checkbox"/> Rake <input type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____ <u>Data collected during August 2006 Tier II</u>			
Aquatic Plant Name		Check if Target Species	Relative Abundance % of Community
Coontail			15
Elodea			15
Flatstem pondweed			10
Richardson's pondweed			10
Eel grass			20
Bur-marigold			5
Eurasian watermilfoil		x	5
Chara spp.			1
Sago pondweed			1
Southern naiad			1
Variable pondweed			1
largeleaf pondweed			1
Whitestem pondweed			5
Water stargrass			5
Robbin's pondweed			5
<i>INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.</i>			
Applicant Signature _____			Date _____
Certified Applicant's Signature _____			Date _____

FOR OFFICE ONLY			
<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Fisheries Staff Specialist	
<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Environmental Staff Specialist	
<p>Mail check or money order in the amount of \$5.00 to:</p> <p><b>DEPARTMENT OF NATURAL RESOURCES</b>          DIVISION OF FISH AND WILDLIFE          COMMERCIAL LICENSE CLERK          402 WEST WASHINGTON STREET ROOM W273          INDIANAPOLIS, IN 46204</p>			



# 2007 Stone Lake Permit



## APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)

Approved State Board of Accounts 1987

☐ Whole Lake ☒ Multiple Treatment Areas  
Check type of permit

INSTRUCTIONS: Please print or type information

### FOR OFFICE USE ONLY

License No.

Date Issued

Lake County

Return to: Page 1 of 2

DEPARTMENT OF NATURAL RESOURCES

Division of Fish and Wildlife

Commercial License Clerk

402 West Washington Street, Room W273

Indianapolis, IN 46204

FEE: \$5.00

Applicant's Name <b>Laporte Area Lake Association</b>		Lake Assoc. Name <b>Laporte Area Lake Association</b>
Rural Route or Street <b>328 Oak Drive</b>		Phone Number <b>219-324-2058</b>
City and State <b>Laporte, IN</b>		ZIP Code <b>46350</b>
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake) <b>Stone Lake</b>	Nearest Town <b>Laporte</b>	County <b>Laporte</b>
Does water flow into a water supply		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Please complete one section for EACH treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # <b>1</b>	LAT/LONG or UTM's <b>Center of Bed @ N41.61165 W86.75231</b>		
Total acres to be controlled <b>1</b>	Proposed shoreline treatment length (ft) <b>400</b>	Perpendicular distance from shoreline (ft) <b>100</b>	
Maximum Depth of Treatment (ft) <b>6</b>	Expected date(s) of treatment(s) <b>early June and late July</b>		
Treatment method: <input checked="" type="checkbox"/> Chemical <input type="checkbox"/> Physical <input type="checkbox"/> Biological Control <input type="checkbox"/> Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. <b>Reward/Nautique</b>			
Plant survey method: <input type="checkbox"/> Rake <input checked="" type="checkbox"/> Visual <input type="checkbox"/> Other (specify) _____			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf pondweed	X	30
Eurasian watermilfoil	X	10
Common naiad	X	20
Norther watermilfoil	x	10
Largeleaf pondweed		10
Leafy pondweed	X	10



